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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/762,106	01/21/2004	Knud Reuter	CH-7961/LeA 35,552	3885
157	7590	05/26/2005	EXAMINER	
BAYER MATERIAL SCIENCE LLC 100 BAYER ROAD PITTSBURGH, PA 15205			WU, SHEAN CHIU	
			ART UNIT	PAPER NUMBER
			1756	

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/762,106	Applicant(s) REUTER ET AL.	
	Examiner Shean C. Wu	Art Unit 1756	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2004.
- 2a) ☐ This action is **FiNAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7-9, 11-13, 15, 17 and 19 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 10, 14, 16, 18 and 20 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>8/26/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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DETAILED ACTION

Claim Objections

1. Claims 10, 14, 16, 18 and 20 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

2. Claim 1 and 8 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for the species taught and disclosed in the specification, does not reasonably provide enablement for the species other than taught in the present specification. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. The claims are broader than the enabling disclosure. The claimed invention is not supported by examples commensurate in scope. There are no teachings how to make the mesogenic group connected to 3,4-alkylenedioxythiophene through oxygen atom or thiophene. There is only a mesogenic group attached through carbon atom of dioxy ring. Liquid crystal (LC) is unpredictable art. The properties of LC vary greatly with the number and type of rings, bonding, lateral and terminal substituents and polarities. All govern the properties of the LC and mixture thereof, which further determine the utility in one of a multitude of functionally distinct compositions and displays for optical applications. Applicants claim offer little more than an invitation to experiment or even presupposing the species can be readily made. Without

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knowledge of the properties of species commensurate in scope with the claims, Applicants invite the skilled artisan to first synthesize and then test the species before a use can be undue.

Claim Rejections - 35 USC § 112

3. Claims 3, 7-9, 11-13, 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 3, what is a terminal group if $n=2$?

In Claim 7, the claim is vague because Claim 2 is claimed as compounds not a mixture.

In Claims 8, the “step” of preparing the present compound is missing. Also, the claim is vague because Claim 1 is claimed as compounds not a mixture.

In Claim 9, the claimed “polythiophenes” represented by repeat unit of formula (IV) is confused with formula (I) in Claim 2, which has “ n ” degree of polymerization. If Applicants intend to claim a *polythiophene*, they should rewrite the claim as an independent form.

Claims 11 and 12, the “cations” and “anions” do not have an antecedent basis.

In Claim 15, the claimed polythiophene is vague because the formula (I) has repeating units 1-8 (the value of n).

Claims 13, 17 and 19 are rejected because they are depended on the rejected claim 9.

Claim Rejections - 35 USC § 102

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4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7-9, 13, 15, 17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Kros et al. (Polymer Chemistry, 40(6), page 738-747).

The reference discloses poly (3,4-ethyleendioxythiophene)-based copolymer for biosensor application. The 3, 4-ethyleendioxythiophene core structure with functional groups including phenylene ring (compound 4) is described in Scheme 1, which read on the present formula (1). The polymerization of compound 4 is disclosed in Table 1 on page 742. The reference polymer having conductive property anticipates the claimed invention.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-3, 7-9, 13 and 15 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krishnamoorthy et al. (Synthetic Metals 124 (2001), pages 471-475).

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The reference discloses a polymer based on a rigid cyanobiphenyl substituted 3,4-ethylenedioxythiophene used in electrochromic/display applications (see abstract and section 3.1). The reference differs from the claims in that the claims exclude the reference compound. Because it is known that the space groups $(CH_2)_6O$ of the reference can be adjusted, therefore it would have been obvious to those skilled in the art to modify the starting material by adjusting the length of alkyloxy of cyanobiphenyl to arrive at the claimed invention.

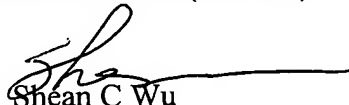
8. Claims 5 and 6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shean C. Wu whose telephone number is 571-272-1393. The examiner can normally be reached on 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Shean C Wu
Primary Examiner
Art Unit 1756

scw